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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/488,141	01/20/2000	Mirjana Popovic	SMC1P003	4005

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EXAMINER

SINGH, RAMNANDAN P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/488,141

Applicant(s)

POPOVIC ET AL.

Examiner

Ramnandan Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,9,10,12,13,15-20,22,23 and 26-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34-39 is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9,10,12,13,15-19,22,23,26-29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 7,20 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 12 November 2003 have been considered but are moot in view of the new ground(s) of rejection.

2. On page 9 of Applicant's Remarks, the list of Claims cancelled is in error, and does not include "cancelled Claim 2". Also, the list of Claims pending is in error, because it includes "cancelled Claim 2".

3. In view of cancellation of claims 21, 24-25 and amendment to claim 16, the indicated allowability of claims 16-25 set forth in the Office action dated 9 July 2003 is withdrawn.

4. Status of Claims

Claims 1, 4, 6, 9, 10, 12, 13, 15-16, 19, 22-23 are amended.

Claims 2-3, 8, 11, 14, 21, 24-25 are cancelled.

New claims 26-39 are added.

Claims 1, 4-7, 9-10, 12-13, 15-20, 22-23, 26-39 are pending.

Drawings

5. drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Claim 5 recites "said envelope is generated **by an infinite impulse response (IIR) low pass filter**". This IIR filter is not shown. A similar thing holds for Claims 6, 18-19, 29, 34. Therefore, "the IIR filter" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

6. The applicant's specification is objected to because of the following informalities:

(i) On page 2, line 20, the term "(1-alpha) Abs Y" is in error.

Replace the term "(1-alpha) Abs Y" with the term " $(1-\alpha) * \text{Abs Y}$ ".

In addition, the terms "Abs Y" and "Abs Y_0 " are required to be defined.

A similar thing holds for the terms in Equation (1) on page 6, line 12; Appendix A, on page 10, line 7; and Appendix B, page 11, line 6, 6, 8.

Appropriate correction is required.

Claim Objections

7. Claim 34 is objected to because the claim is a method claim whose steps are not in logical order. The step of "generating an envelop of the power level of said signals.....a previous monitor signal" should be before the step of "performing power calculationthe current monitored signal".

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 16, 31, 32, 34, 37, 10, 13, 23, 27, 33, 36, 39 are rejected under 35 U.S.C. 112, second paragraph, as being mis-descriptive.

Claim 1 recites the limitation "**at least the most significant bits of said string having a zero value**" on page 3. However, the Applicant's specification, Appendix B [Page 11] shows "**at least the least significant bits of a string of n-bits having a zero value**" which is consistent with the graph shown in Fig. 4. Thus, claim 1 is mis-descriptive. A similar thing holds for claims 16, 31-32, 34 and 37. Further, since claims 10, 13, 23, 27, 33, 36, 39 relate to "**at least the least significant bits of said string having a one value**", these claims are also mis-descriptive.

Appropriate correction is required.

Compact Prosecution

10. Examiner assumes that one of the limitations of claim 1 reads as follows:

“at least the most significant bits of said string having a zero value”.

This is consistent with the current Office policy of compact prosecution. According to M.P.E.P. §706, “the goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity.”

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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12. Claims 1, 4-6, 9, 12, 15-19, 22, 26, 28-29, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vary [US 4,623,980] in view of McCaslin et al [US 5,764,753] and further in view of Leach [US 6,128,725].

Regarding claim 1, Vary teaches a method of canceling echo in speech frequency electrical signals (i.e. communication systems) comprising the steps of: applying a monitoring signal to a discrete Fourier transform to produce **spectral** signals (i.e. **to determine a power density function**) V_v ; and processing the spectral signals by any combination of an adaptive level control and echo cancellation to produce W_v suitable for **echo cancellation and signal masking** [col. 7, line 41 to col. 8, line 27; col. 8, lines 42-48; col. 2, lines 19-29; col. 2, line 59 to col. 3, line 9; col. 6, line 45 to col. 7, line 9].

Vary does not teach expressly estimating the power of a signal utilizing an IIR filter; and applying mask generating circuitry to cancel echoes.

McCaslin et al teaches calculating power level [Figs. 2, 20, 22; col. 3, line 59 to col. 4, line 4; col. 22, lines 35-45].

Leach teaches least significant bit (LSB) mask generation circuitry 610 and most significant bit (MSB) mask generation circuitry 620 to apply masking for echo cancellation [Fig. 9; col. 6, line 19 to col. 7, line 54; col. 8, lines 7-33; col. 3, lines 36-44].

Vary, McCaslin et al and Leach are analogous art because they are from a similar problem solving area, viz. , echo suppression in communications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the power estimators of McCaslin et al to Vary to compute the power density function of signal using the IIR filtering [McCaslin et al; col. 1, 35-41]; and the mask generator of Leach to the echo canceller system of McCaslin et al and Vary to cancel echoes [Leach; col. 1, col. 3, lines 39-44] and provide an echo-free communications.

Claims 16, 32 are essentially similar to claim 1 and are rejected for the reasons stated above.

Claim 28 is essentially similar to claim 1 except for a difference signal . McCaslin et al shows this difference signal as an error signal in Fig. 19 for echo cancellation.

Regarding claims 4-6, McCaslin et al teaches generating a power level envelope using Equation (2) [Fig. 2; col. 7, lines 34-60; col. 28, lines 44-51; col. 30, lines 4-15].

Claims 17-19 are essentially similar to claims 4-6 and are rejected for the reasons stated above.

Claim 29 is essentially similar to claim 6 and is rejected for the reasons stated above.

Regarding claim 15, the adaptive filter, IIR, of McCaslin et al synthesizes a linear approximation of an echo estimate [Fig. 22; col. 1, line 65 to col. 2, line 6].

Regarding claim 9, Leach teaches a least significant bit (LSB) mask generation circuit shown in Fig. 10A, wherein the LSB mask has a zero in all bit positions [col. 6; lines 59-62].

Claims 12, 22, 26 are essentially similar to claim 9 and is rejected for the reasons stated above.

Allowable Subject Matter

13. Claim 34-39 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

EXAMINER's STATEMENT FOR REASONS OF ALLOWANCE:

The present invention is directed to a system and method for suppressing echo signals generated in a communication path. Independent claims 34 and 37 identify the

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uniquely distinct feature of the method comprising: calculating an echo signal level by

solving the equation: $\text{Echo} = \text{Abs } Y/10^{(A/20)}$

where A is the minimum attenuation of echo signals; and Y is the power level of the current monitored signal.

Also, since claims 35-36 and 38-39 are dependent from independent claims 34 and 37 respectively, they are also allowable.

14. Claims 7, 20, 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

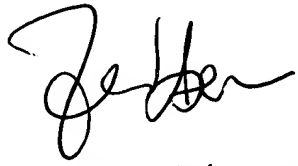
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (703)308-6270. The examiner can normally be reached on M-F(8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester Isen can be reached on (703)-305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-0377.

February 3, 2004


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Ramnandan Singh
Examiner
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